

FLIGHT

The
AIRCRAFT
ENGINEER
AND
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

June	...	Imperial Air Conference
June 10	...	Race, Lugo-Trieste-Triente-Lugo
July 2	...	Aerial Pageant (Hendon) for R.A.F. Memorial
July 6	...	Entries close for Aerial Derby
July 16	...	Aerial Derby
July 29-31	...	Jacques Schneider Cup, Venice
Aug. 27	...	Entries Close for Coupe Deutsch
Sept. 4-11	...	Brescia Races
Sept. 10	...	Pulitzer Trophy, Detroit, U.S.A.
Sept. 18	...	Gordon Bennett Balloon Race
Sept. 25-	...	
Oct. 2	...	Aero Exhibition, Prague
Oct. 1	...	Coupe Deutsch de la Meurthe
Nov. 12-27	...	Paris Aero Salon

EDITORIAL COMMENT



THE use of airship "R.33" for the purpose of assisting the police to regulate the traffic to Epsom Downs on Derby Day was, so far as the work of the ship was concerned, an unqualified success. Reading the log of the day's work, it is quite manifest that the observer flying above the roads in a stable craft like "R.33" is at an enormous advantage compared with the one who is endeavouring to straighten out a traffic tangle from observations gathered on the ground. In the first case, the whole network of roads covering several square miles of country is spread out below, fully visible, and all the conditions of traffic existing at every point completely appreciable. In the other, no more than a few hundred yards of a single road can be seen, while conditions at other points have to be assumed. Naturally, mere observation of traffic conditions cannot help at all unless those conditions can be communicated to those below who are responsible for their regulation, and it is here that the latest developments of wireless telegraphy and telephony come to the rescue.

A wireless station had been established for the day at the grand stand at Epsom, and with this station "R.33" was able to keep in constant touch, greatly to the help of the police on traffic duty. For example, we find in the log an entry, dated 10.58 a.m., as follows: "Suggest part of congested traffic in Ewell be diverted at point 10 via Epsom College to racecourse." The answer was received: "Police proceeding to Ewell." Then, at 11.50 a.m., there is another entry: "Traffic is now moving from Ewell at point 10 to Epsom via College, and is affording immediate relief to the Surbiton and Wimbledon roads." It is quite clear that if it had not been for the information transmitted by "R.33" the congestion at Ewell would have lasted for hours, since the police on the spot would have simply been able only to sort it out as best they could, and would not have been able to divert it via the College because they would have had no reason to think that the latter road was in any less congested a state than the rest. Only aerial observation, covering as it does a large area of roads, can be informative of

the general state and of what roads are comparatively clear and therefore to be used as by-pass thoroughfares. But the advantages are so manifest that there is no need to labour the point. The experiment was a triumphant success, and must have been productive of invaluable information for the police.

We believe the organisation on the ground left something to be desired, owing mainly to the lack of means of communication between the wireless station and points where traffic congestion was likely to happen. Had better facilities been provided in this direction the control scheme would have proved even better in practice than it did. There is no need, however, to criticise this. The whole thing was frankly an experiment. Traffic control by aircraft was on its trial, out of which it emerged with honours. Most valuable experience was gained—experience which will doubtless be used to still further improve control on subsequent occasions. Indeed, we understand that, so satisfied are the authorities with the results that the Air Ministry has been asked to allow "R.33" to be used for similar work during the forthcoming Ascot meeting.

The R.A.F. Pageant

Apparently the Royal Air Force Pageant, which was such a tremendous success last year, is to become an annual affair. According to a recent Air Ministry *communiqué*, it is very properly regarded as an integral part of the annual training of the R.A.F., fulfilling the same function as does the Royal Tournament in the case of the Navy and the Army. It is obviously impossible within the confined space of a building such as Olympia for the R.A.F. to demonstrate the most important sides of its work in war, and its officers and men can thus only participate in the Tournament in a very minor degree. The Air Council has, therefore, decided that the Pageant is to take place every year in order not to lose the valuable stimulus to keenness and efficiency provided by inter-unit competitions and displays, especially when conducted before a critical audience. Last year's Pageant was a great success and proved that the public is as keenly interested in Service aviation as in the work of the two older fighting Services, and welcomes an opportunity of obtaining first-hand knowledge of the work of the R.A.F.

Apart altogether from the public interest engendered, the Pageant gives an opportunity which would otherwise be almost completely lacking of bringing together representatives of the different types of squadrons which carry out the extremely varied work of the Force. Fighters, bombers, artillery observation squadrons, are all included in the display given by the officers and men of the Force in the course of the operations which go to make the Pageant and the experience thus gained of combined work in competition must be excellent for the *morale* and efficiency of the whole Service. This element of competition, which is so much to the front at the Tournament, is of untold value to the Service as a whole. Before the date set for the Pageant, all the operations are rehearsed day after day, until every officer and man concerned is letter perfect in his share of the work. The consequence is that on the day there is a display of aviation such as we take leave to say is not matched in any country in the world.

On every count we commend the Pageant as one of the best imaginable competitions—for it is as

much a competitive affair as the Tournament—for keeping up the efficiency of the R.A.F. Not only that, but it is a matchless spectacle for those of the public who are fortunate enough to witness it, while it has the added merit that the whole of the proceeds are devoted to the cause of Service charities. All roads should lead to Hendon on the 2nd of July.

An Air Force Reserve

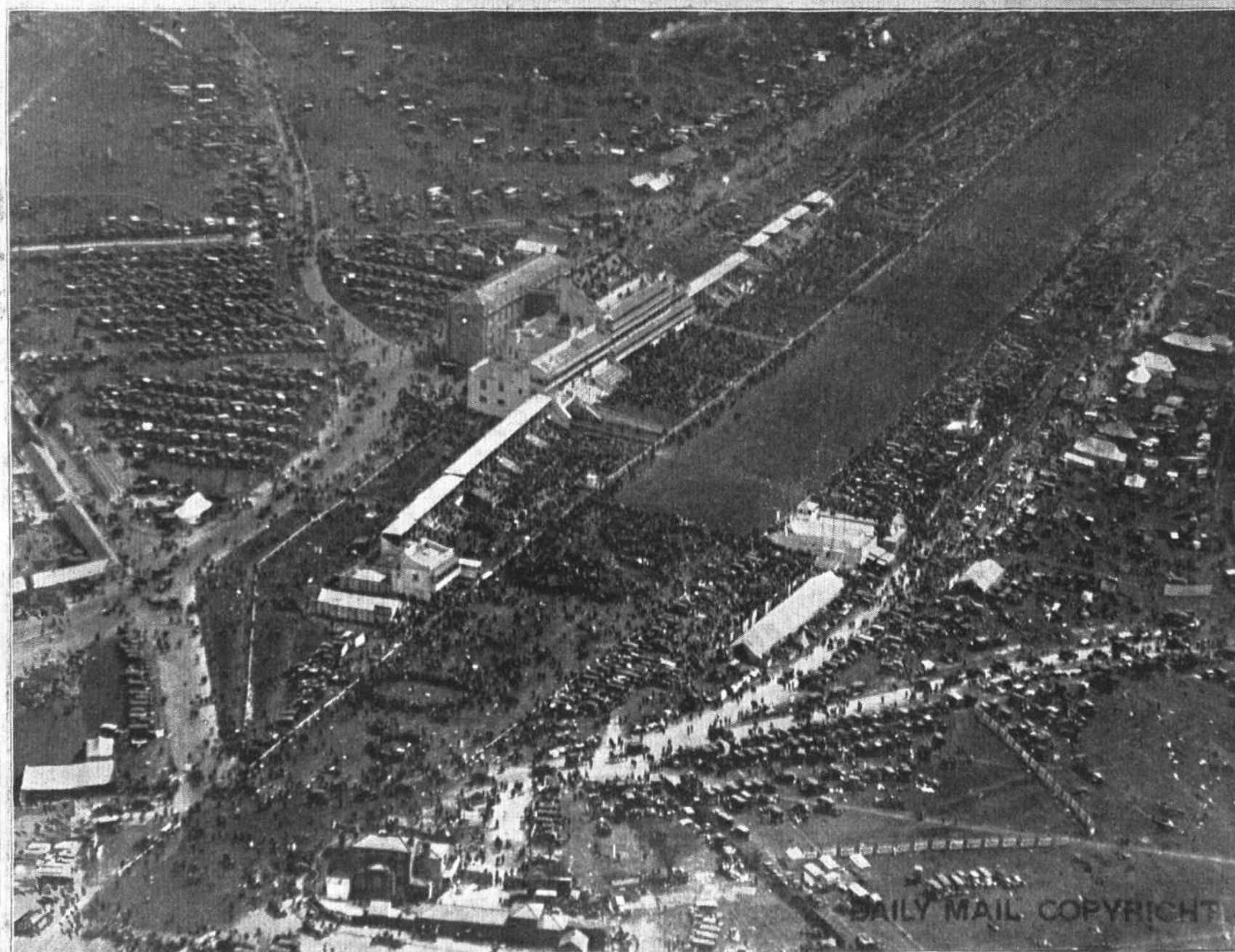
In reply to a question addressed to him in the House recently Capt. Guest said that at present there was no authority to form an Air Force Reserve of Pilots, but the regulations to establish one would, it was hoped, be approved and issued shortly. Provision would be made for periodical flying practice for those reserve officers who would be employed in flying duties in case of mobilisation. It was not considered, he said, that provision from public funds of free facilities for flying in the case of officers who had no reserve liability would be justified.

We are glad to know that it is really contemplated to form a flying reserve, which is a step we have been advocating with all our might before and ever since the general demobilisation of the regular Air Force after the Armistice. It seems deplorable to us to see hundreds, if not thousands, of competent flying officers who rendered magnificent service during the war, drifting back to other occupations and losing all active touch with aviation, simply for lack of the proper facilities for maintaining their knowledge of actual service flying and its developments—all for want of the constitution of a reserve which we shall want very badly indeed if ever we become involved again in a great war. We admit that at present the chance of such a contingency may appear somewhat remote, but the world is by no means inclined, apparently, to settle down into the ways of peace, and no man can say what the morrow may bring forth. The horizon is not so clear that we can afford to neglect preparedness for any eventuality. Obviously, as we have so often urged in these pages, the best, as well as the cheapest, way to ensure complete aerial preparedness is by keeping in being a small but highly efficient regular air force, with a well-trained and large reserve behind, ready to expand to war strength the moment necessity arises. So far, we have nothing at all behind the R.A.F., but the demobilised officers and men who served in the War, and who are under no liability to serve again. Undoubtedly a very large number would volunteer in case of emergency, but that is not the same as having an absolute call on their services. Moreover, unless we have a properly constituted reserve, we have no means of knowing to what dimensions the regular force can be expanded, should emergency suddenly arise. We welcome, therefore, the announcement that this hiatus is to be filled.

There is another point which we note. In his reply the Air Minister seems to have studiously ignored the "Territorial" term which we have heard more than once in connection with a proposed reserve to the Air Force. We have been, and remain, consistently of opinion that a territorial organisation would be wrong, and that the only way in which the Air Force Reserve can be organised is on the lines of the Royal Naval Reserve. We seem to think that this is the organisation which was in the mind of the Air Minister when making his reply. We trust it was so, in the interests of efficiency and economy.

The Camera and the 'Plane

JUNE 9, 1921



Epsom Downs on Derby Day, just before the great race, a remarkable photograph taken from the air by a *Daily Mail* staff photographer, from an Instone aeroplane. Note the well kept course up to the finishing post by way of contrast to the packed crowds everywhere else. Also the parked cars behind the Grand Stand and at other points.

A Cairo-Basra Air Service

A project is on foot for the institution of an air service between Cairo and Basra, via Jerusalem, Damascus and Bagdad. It is said that arrangements are already fairly well forward, and that a first-class fleet of commercial aeroplanes is to be employed on the route. The project is certainly ambitious, but there is no reason to think that it cannot be justified by the possibilities which seem to open up of successful operation of a service between these places. It is true that a part of the route is already served by the Bagdad railway, but this, even before the War, was not conspicuous either for the quality or the regularity of its services. In the course of hostilities both the railway and its stock suffered very severely, and at the present time only very intermittent services are the rule. But, even if the railway were working well, there seems to be no reason why an air service should not prove successful. The distances between the places named are great, and considerable

time is wasted in travelling by ordinary methods. A regular service of aeroplanes would cut off many days from the time now taken to travel from Egypt to the head of the Persian Gulf.

There is considerable trade between these places, and it follows a somewhat peculiar route. From Cairo to Basra, across the Syrian Desert, is about 1,000 miles in a straight line. The trade route follows a much longer track through Suez, Jerusalem, Damascus, Aleppo, Alexandretta, Diabekr and Bagdad to Basra, thus describing almost a complete semi-circle of some 1,800 miles. Obviously, an aerial service must more or less follow the beaten trade routes, even when distances are so greatly increased thereby as they are in this case.

We understand that the Government is taking a lively interest in this proposed new service, probably as a result of the visit of Mr. Churchill to the East, but when it is to be started and with what types of machines is not as yet available.

HONOURS

AMONGST the names appearing in the Birthday Honours List, are the following:—

Barons

SAMUEL, Sir MARCUS, Bt.—For eminent public and national services. A generous benefactor to charitable and scientific objects, and whose connection and control of the Shell Co.'s enterprises have made his name familiar the world through.

Baronets

ALEXANDER, DOUGLAS.—Head of the Singer Manufacturing Company. Large contracts were undertaken during the War for the manufacture of 6-in. and 15-in. shells and aeroplane parts on a "without profits" basis.

FRASER, Sir JOHN MALCOLM.—For public services. Rendered valuable assistance in the Queen's Devonshire House Fund and in the Royal Naval Air Service during the War.

Knights

INSTONE, SAMUEL.—S. Instone and Co., Ltd., of 49, Leadenhall Street, E.C., Paris, and Italy. Founder of Askern Garden City, Doncaster. Very large subscriber to war charities. Mr. Instone is, of course, well known in aviation circles as head of the Instone Air Service, one of the two British firms which are still running regular services between London and Paris. Although an important air line, this forms only an auxiliary branch of the firm, who are ship and colliery owners, with branches at Cardiff, Newcastle, Plymouth, Askern (Yorks.), Genoa, Antwerp, etc. At the outbreak of war Mr. Instone chartered a large number of steamers owned by neutrals, and placed them in the trade between this country and France.

SMITH, HENRY WHITE, C.B.E.—Chairman of the Bristol Aeroplane Company. Mr. White Smith is knighted for his important work in connection with aviation. He has been a director of the Bristol firm since its inception in 1910,

when it was known as the British and Colonial, and on the death of his uncle, the late Sir George White, he became chairman of the firm. He is also chairman of the Society of British Aircraft constructors. Sir Henry was made a Chevalier of the Legion of Honour in 1919, and is well known throughout the world, not only through his connection with the Bristol Aeroplane Co., but also for his numerous lectures on commercial aviation. He is a member of the Council of the Federation of British Industries, and is also a member of the Executive Committee of the Engineering and National Employers' Federation. A short time ago he received the gold medal and diploma of the Imperial Japanese Civil Aviation Society.

Air Force Awards

Air Force Cross.—Flight-Lieut. E. B. GRENFELL.

Bar to Air Force Medal.—No. 200695 S.M. II. W. R. MAYES, D.S.M., A.F.M.; No. 314892 Flight-Sergt. S. J. HEATH, A.F.M.

Rescue of Comrades in Mesopotamia

The King has approved of the following reward to the undermentioned officer in recognition of gallantry and devotion to duty in Mesopotamia:—

BAR TO THE DISTINGUISHED FLYING CROSS.

Flying Officer Dudley Lloyd Evans, M.C., D.F.C., R.A.F. (Distinguished Flying Cross gazetted December 3, 1918).—For gallantry, skill and devotion to duty on November 1, 1920, while accompanying another machine on reconnaissance. Owing to engine trouble the second machine, with pilot and observer, had to make a forced landing in hostile country. A party of mounted Arabs at once started firing at the observer, who was dismantling a Lewis gun. On seeing this, Flying Officer Evans landed at great peril to himself, took both officers on his already loaded machine, and, getting off with much difficulty, returned to Headquarters.

last week on one of the R.A.F. aerodromes proved the new amphibian gear to be very effective, and a considerable improvement on previous ones. On the sea also the machine behaved in the typical Supermarine way, and the machine has now been taken over by the Air Ministry, being flown from Southampton to Isle of Grain by a Service pilot in a non-stop flight. As the machine is the property of the Air Ministry, no details can be published.

Civil Air Services in French Guiana

At present six hydro-aeroplanes are running a regular service between Saint-Laurent du Maroni and Cayenne (260 km.) and Paramaribo (Dutch Guiana), a distance of 250 km., and air transport has become popular, both for passengers and goods. Carriage of goods is very remunerative, as people prefer to send gold, balata, essence of rose, etc., by aircraft, which cover the distance from Saint-Laurent to Cayenne in six hours, whereas by canoe the time taken is twenty days.

Within a short time the three Guianas are to be linked up by a regular air system, which will enormously facilitate intercommunication.

Independent Force (R.A.F.) Third Annual Dinner

In addition to the Chief of the Air Staff and H.R.H. The Duke of York, the following have already intimated their intention to be present at the Reunion at the Hotel Cecil on June 20:—Major-General J. E. Dickie, C.B., C.M.G., Group-Captain Newall, C.M.G., C.B.E., A.M., Wing-Commander L. Greig, M.V.O., Wing-Commander Landon, D.S.O., O.B.E., Lieut.-Col. Waley Cohen, C.M.G., D.S.O.

To ensure seats being reserved, eligible officers should communicate with the Hon. Secretaries, Major T. Vincent Smith, M.C., or Sq.-Ldr. S. M. Cleverly, c/o Room 337E, Alexandra House, Kingsway, W.C. 2.

Brazil and Military Aviation

BRAZIL is budgeting to devote 12,000 contos of reis (nominally £600,000) to military aviation.

A New Supermarine Amphibian

FOR some time it has been known that the Supermarine Aviation Works of Southampton have been engaged on the construction of a new amphibian machine for the Air Ministry. We now learn that the machine has been completed, and has successfully undergone her tests. The shore landings made

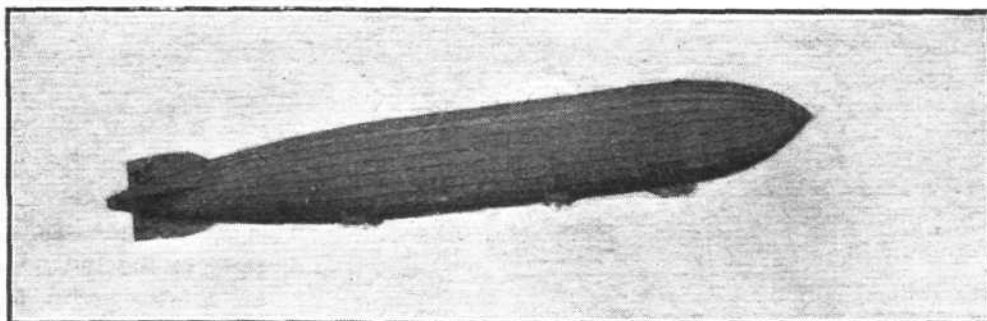
"ZR. 2" ("R. 38")

A Visit to the Royal Airship Works

At the invitation of the Air Ministry we were able, last week, to pay a visit to the Royal Airship Works at Cardington, near Bedford, where we saw not only much of considerable interest in the way of airship construction, etc., but we also had an opportunity of inspecting the huge rigid airship "R. 38," or, having been purchased by the U.S. Government, "ZR. 2," as she will be known on the "other side." We were also fortunate in being able to inspect "R. 37" under somewhat favourable conditions, this ship being alongside the other ship in "skeleton" form, very nearly completed.

tion to castings. It has been used chiefly for experimental work which has resulted in the development of an aluminium alloy superior both in the cast and rolled form to any previously produced. The workshops cost £90,000, and are designed to employ up to 3,000 hands. An engine test house with water brakes for testing engines after repair, or, in special cases, before installation in the ship, has been erected during the last year.

There is also a hydrogen plant, of the blue water gas type, having a capacity of 200,000 cu. ft. per day of hydrogen at



The "ZR. 2" (R. 38) :
A drawing of the
"ZR. 2" (R. 38) show-
ing the general lines.

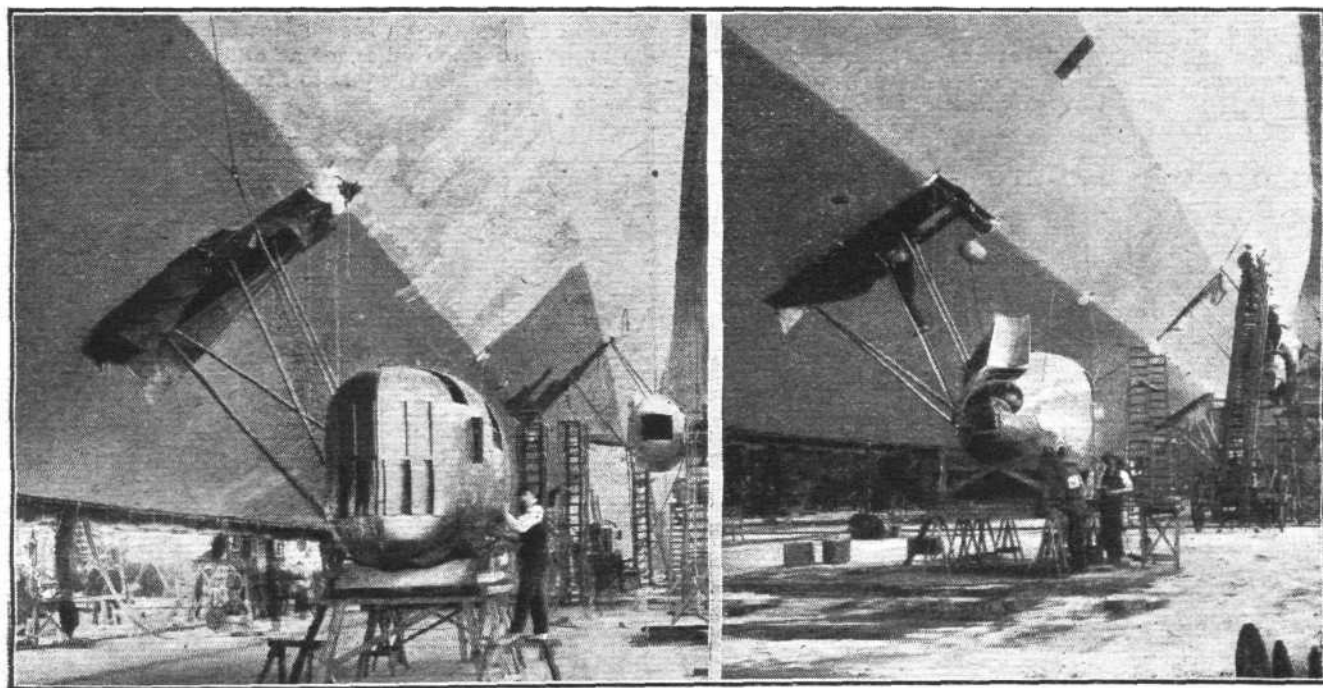
Before dealing with "ZR. 2" we give the following brief particulars of the Royal Airship Works which we think will be of interest. These works were erected by the Government in 1916-17 for the use of Messrs. Short Bros. in building rigid airships. On the 1st April the works were taken over from Messrs. Short Bros. by the Air Ministry, and it is now the last survivor of the four rigid airship construction stations existing at the time of the Armistice. The airships built at Cardington were the "R. 31" and "R. 32," both of 1,500,000 cu. ft. capacity, with a gross lift of 47 tons and a speed of 69 m.p.h., and of wood construction; the "R. 37," which is similar to "R. 36" and is practically finished; and "R. 38."

There is a well-equipped alloy plant, and rolling mills, which cost £33,000, including producer gas plant. The alloy plant includes a foundry having a capacity of 2 tons per day

not less than 99.2 per cent. purity. It is also possible to produce blue water gas for heating metal baths, muffle furnaces, etc., throughout the establishment. On the aerodrome is a large airship shed and two wind screens. The size of the shed, internally, is 700 ft. long, 180 ft. wide, and 110 ft. high at the doors. The height at the doors can, at small cost, be increased to over 120 ft. for larger airships. The total external width is 250 ft., and the overall height 145 ft.

The aerodrome proper covers about 400 acres. The establishment includes, in addition, administrative buildings; electric sub-station for conversion of electric current supplied by the Borough Corporation; canteen and pay offices, etc.; quarters for about 230 officers and men for use of handling parties and crews during trial flights of airships.

Adjoining the works is a model village (for employes,



"Flight" Copyright
THE "ZR. 2" (R. 38): The power wing cars, each containing a 350 h.p. Sunbeam "Cossack." On the left may be seen the forward, middle and aft port wing cars viewed from the front. On the right a rear view of the aft starboard wing car.

of aluminium alloy and which is used also for producing castings of gunmetal, etc. The rolling mill is designed for use with aluminium alloys, and a rolling machine for forming channels, angles, etc., for constructional work, and a draw bench for straightening these and for light work are provided. The whole plant was designed for a production of 3 tons a week of structural material for airship construction in addi-

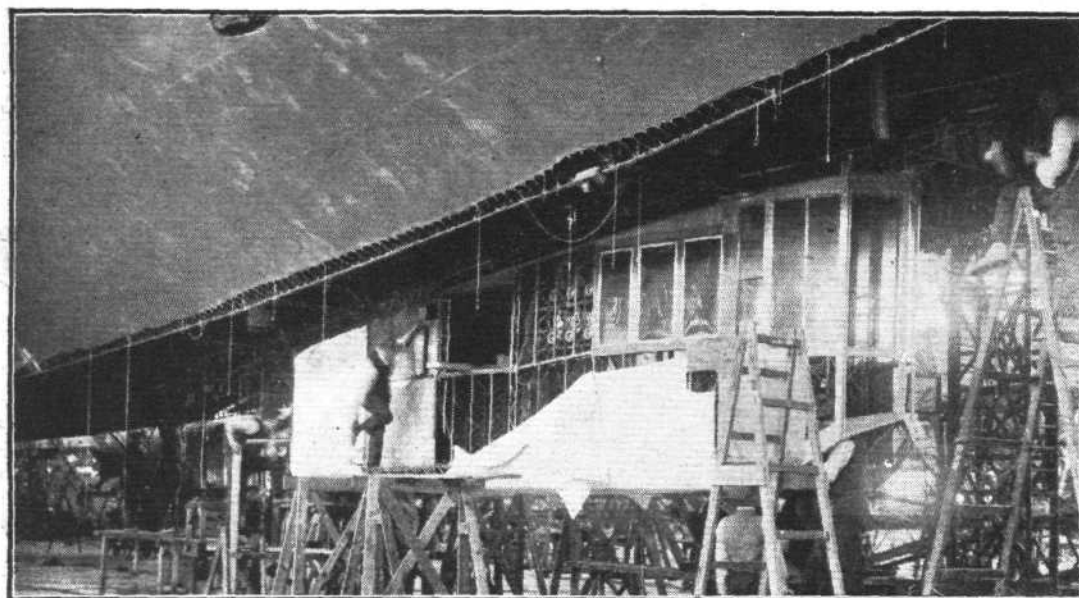
etc.), which includes 153 tenancies, a club and social hall. The total cost of this village (without land) was £112,000. Mention must also be made of the laboratory, equipped for current work of the establishment, and for research on matters peculiar to airships.

The design of "R. 38" was decided upon by the Admiralty in the spring of 1918, and construction was started by Messrs.

Short Bros., at Cardington, in November the same year. Later, in April, 1920, when the Air Ministry took over the works, work was continued by the Ministry. "R. 38" is the largest rigid yet constructed in any country. Its capacity is larger by some 300,000 cu. ft. than that of the ex-German airship "L. 71." (See FLIGHT, February 3, 1921.)

"R. 38" was designed for naval purposes, first consideration being given to the attainment of the greatest possible ceiling—the experience of Germany in the use of airships for scouting and night raiding having demonstrated the necessity for the ability to climb rapidly to high altitudes.

Total lift under normal conditions	83 tons.
Total h.p.	2,100.
Engines	6 Sunbeam "Cossack" of 350 h.p.
Normal crew (officers and men)	28-30.
Armament	14 Lewis guns. 1 1-pdr. automatic. 4 520-lb. bombs. 6 230-lb. bombs.



The "ZR.2" (R.38):
The forward control
and wireless car.
This car is attached
directly to the hull,
and is not fitted with
a power plant.

"Flight" Copyright.

The construction of "R. 38" marks indeed a very definite advance in British airship practice as it is the first ship of purely British design and not merely a copy of previous German ships—if exception be made of "R. 80."

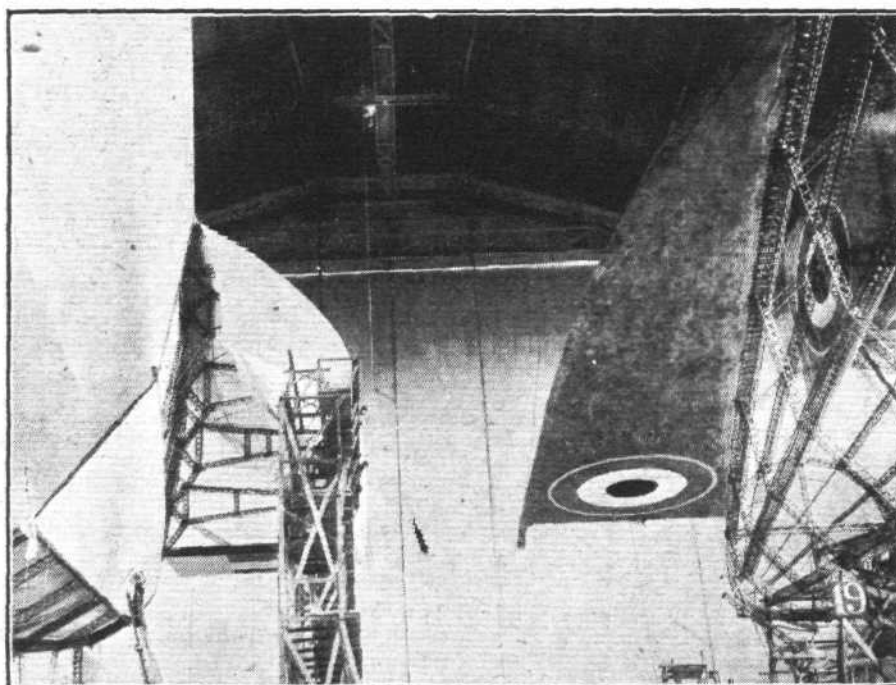
The story of German progress in rigid airships during the War is mainly a record of ever-increasing efficiency gained by constructional improvements to reduce weight both as regards hull and machinery, culminating in the production of the "L. 70" class, which was capable of rising to about 24,000 ft. The class to which "R. 38" belongs, and of which it was to be the pioneer, was intended to consist of four airships. Before work on them had progressed far the Armistice

The disposable lift, i.e., the useful lifting power available for petrol and oil, crew, stores, armaments, ballast, etc., as originally designed, was in excess of 50 tons as against 30 tons in the case of "R. 33" and "R. 34," but some reduction of this figure will follow from various additions which have been made, such as bow mooring gear to permit of the airship being moored to a mast.

"R. 38" will carry, when fully equipped for service, about 30 tons of petrol, which is sufficient for a flight at full speed (70 m.p.h.) of 5,000 miles, or at cruising speed (60 m.p.h.) of 6,500 miles, which is equal to the distance from the British Isles to Japan.

The "ZR.2" (R.38): A view looking up under the tails of R.38 (left) and R.37 (right). The former is being covered with fabric.

"Flight" Copyright

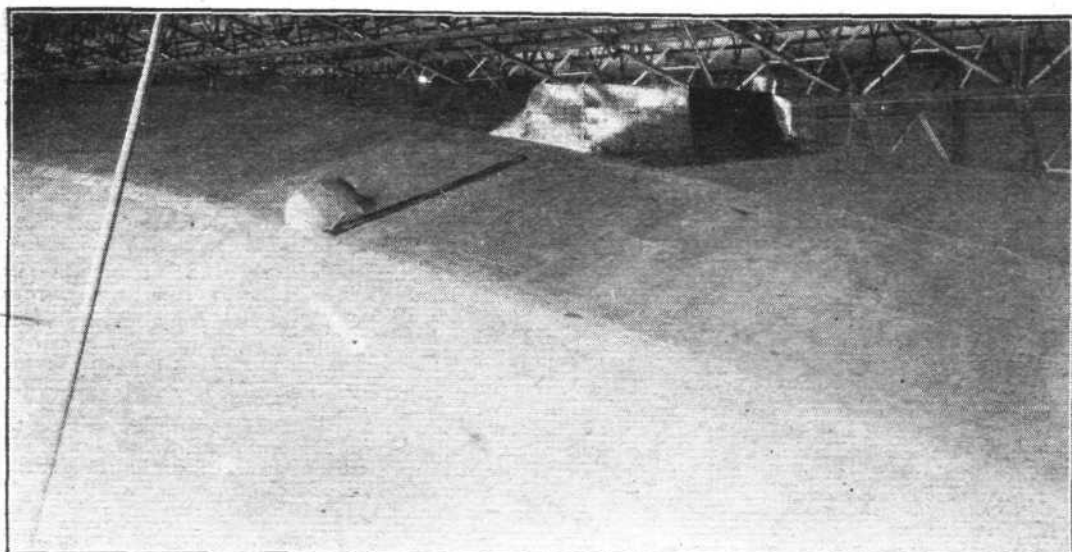


intervened, and the other three airships of the class were cancelled.

The main dimensions and characteristics of "R. 38" are as follows:—

Length	695 ft.
Diameter	85 ft. 4 ins.
Capacity	2,700,000 cu. ft.

In general principles the hull structure follows the standard type as employed in Zeppelins, and previous "R" types. There are, however, numerous alterations in detail resulting in a considerable saving of structural weight. The framework is of Duralumin, and consists of the usual longitudinal lattice girders connected by transverse circumferential girders. There are 14 main gas compartments, containing the gas bags



The "ZR.2" (R.38):
The platform on the
top of the hull, near
the bows, for a
1-pounder auto-
matic gun.

"Flight" Copyright

which are of fabric and goldbeaters skin. In cross section the hull is not absolutely circular, but slightly elongated near the bottom. From the third to the eighth gas compartments the sides are parallel. The corridor, or keel, in "R. 38" is much wider than in previous ships, providing greatly improved accommodation for crew, petrol tanks, water ballast and bombs. The corridor provides communication from end to end of the hull, to the various cars and control stations and to the entrance at the extreme bow from the mooring mast. On the top of the hull, near the bow, is a gun platform, which will carry a 1-pdr. automatic. This platform is shown in one of the accompanying illustrations. There is also a gun trapdoor on the bottom of the hull at the rear of the aft wing cars.

Altogether there are seven cars, the arrangement of which is as follows:—Right forward, at the third gas compartment, is the main control cabin and W.T. room. This car, which has no power plant, is not suspended from the hull, but is rigidly attached thereto, and is comparatively small. At a point between the fourth and fifth compartments are two wing cars, port and starboard, suspended from the hull (by cables) fairly close together, practically level with the keel. Amidships (compartments 6 and 7) are two more wing cars, and these are suspended much higher up and farther apart. Aft of these, at compartments 8-9, are another pair of wing cars, which, as far as we could see, are located similarly to the forward wing cars. Each of these wing cars is of clean streamline shape, with aluminium covering, and contains a 350 h.p. Sunbeam "Cossack" engine, driving a large two-bladed propeller. The forward and aft wing cars are of similar design, and the mid-wing cars appear to be slightly

smaller. All have enclosed nose radiators, the front of the car having adjustable shutters. Communication from the wing cars to the hull is by means of a ladder, which folds up to a streamline strut when not in use, and a trapdoor in the side of the hull.

We noticed a slight difference in the arrangement of the tail, in that the balanced portions of the rudders and elevators are formed by projecting surfaces at the extremities. In previous types, it will be remembered, the balanced portion extended from end to end.

It is intended that after trials have been carried out—and it is expected that these may take place any moment now—and the airship has been handed over to the American Government, the American crew which is now completing airship-training in this country will, after a few further flights to accustom themselves to the behaviour of the airship, fly across the Atlantic to a base in America, where a shed has been built to accommodate the ship and where, it is understood, a mooring mast is also to be erected.

In view of the interest which is being taken at the moment in the use of airships for commercial purposes, it is worthy of note that an airship of the "R. 38" class, adapted for transport, could carry 40 passengers and 2 tons of freight in a non-stop flight to Egypt in about 48 hours.

As a result of the experience gained in the design and construction of "R. 38," a new design has been produced for an improved type of airship with a gas capacity of about 4,000,000 cu. ft., which would be capable of carrying 50 passengers and 13½ tons of freight on a non-stop flight to Egypt in about 40 hours.

A NEW AMERICAN AIRCRAFT MATERIAL—"PLYMETL"

ACCORDING to *Aviation*, the Haskelite Manufacturing Corporation of Chicago have invented and patented a new material which may prove of considerable importance in the construction of aircraft. The new material, which is known as Plymetl, is made by cementing thin sheet-metal faces to a relatively thick core of light material such as, for instance, wood. Owing to the metal faces the material should be practically impervious to moisture, provided of course that the edges are properly covered, while the layer or layers of wood inside should help greatly towards reducing local dents in the very thin sheet-metal, thus making it possible to approach much nearer to realising the full strength of the sheet-metal faces.

At present the material is supplied in panels 30 ins. by 96 ins. by $\frac{1}{8}$ in. thick, but there does not appear to be any reason why other sizes and thicknesses should not be available. It is stated that the material can be cut with either circular saws or band saws.

For fuselage construction, for instance, one would imagine that Plymetl might be very suitable in thinner sheets, while in the form of very thin panels it might prove very useful as wing covering, when probably it could be made to take part of the wing loads and thus enable lighter spars to be used. According to tests carried out, the results of which we print below, the material is very strong, even when a cork core is used, and one can imagine developments of it which would add greatly to the strength. For instance, instead of plain sheet metal, corrugated sheets with a light core of cork or Balsa wood might be used, when the risk of local buckling should be greatly reduced. In this form it is even conceivable

that it might be possible to build a relatively thin wing shell which would be strong enough without any, or with very little, internal structure. If this should prove to be the case the problems of cantilever wings would be much simplified.

Below we publish the results of tests on the material undertaken by the Haskelite company:—

Thickness over all: $\frac{1}{8}$ in. *Faces:* Black sheet steel, 30 gauge. *Core:* Fir wood veneer, planed. *Weight:* 1.8 lbs./sq. ft., or practically the same as sheet steel of No. 19 gauge. *Stiffness:* Five times as stiff as $\frac{1}{8}$ in. solid wood panel, or eighty times as stiff as sheet steel of the same weight, No. 19 gauge. *Elastic limit in bending:* 75 in.-lb. per inch width, or about five times the elastic limit of sheet steel, No. 19 gauge. *Impact test:* A panel 12 ins. by 12 ins. was placed on a steel frame having a clear opening of 10.5 ins. by 10.5 ins. A steel hammer weighing 12.5 lbs. was dropped 20 ins. on to the middle of the panel, producing a permanent deflection of about 0.09 in., but not injuring it otherwise. Same test on a panel of sheet steel of No. 20 gauge produced permanent deflection of about $\frac{3}{8}$ in., buckling the sheet badly out of shape. *Shearing strength of joints:* Bending a short end causes the wood core to fail in shear in the wood, showing that the shearing strength of the cement that binds the metal to the core is even greater than the shearing strength of the wood. *Fatigue test:* Strip 24 ins. long was supported at ends, and the middle was oscillated $\frac{1}{2}$ in. in opposite directions, fibre stress in steel about 24,000 lbs./sq. in. At 4,200,000 oscillations the steel faces were broken about 2 ins. from the middle. Similar test on $\frac{1}{8}$ in. strip with cork core showed similar result at about 5,400,000 oscillations.

THE "L.B." AERO-CAMERA

It may not, perhaps, be necessary for us to dwell at length on how important a part aerial photography played in the Great War, for much has been said already on the subject, in this Journal and elsewhere. A moment's consideration is all that is necessary to realise this—to grasp the possibilities in obtaining photographic records of objects as viewed from above. One thing, however, is not so apparent—to the layman, at all events—and that is, aerial photography is by no means the simple proposition it would appear to be at first sight, as was experienced during the early stages of its employment for war purposes. It must not be taken we mean that aerial photography presents any great difficulties in its accomplishment; what we wish to imply is that it is a science in itself, possessing many technicalities that have had to be solved, more or less by experience, before we could reach the "You press the button, and we do the rest" stage. In other words, a special camera must be used for aerial work—and it must be "special" for successful all-round work.

A camera that achieved some considerable success in the latter stages of the War was the "L.B.," designed by Mr. C. M. Williamson, C.B.E., head of the Williamson Kinematograph Co., of Willesden Green, who claim to be the originators of the automatic aero camera. The "L.B." is the outcome of the experience gained from months of tedious experimental work, and innumerable tests with various types, one of which, known as the "L." type, was very popular and did

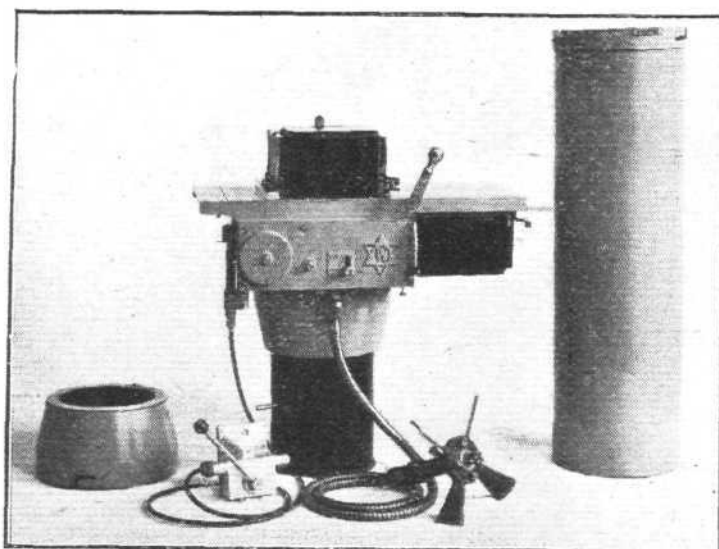
Realising that the "L.B." model will, no doubt, be used by many who have had previous experience with the "L." type, many features of the latter have been embodied in the "L.B.," together with several desirable improvements. The mechanism has been greatly simplified, allowing a

considerable reduction in the size of the camera body, with a consequent reduction in weight. A very important feature—and one of the improvements on previous models—is the employment of a self-contained and easily detachable self-capping focal plane shutter. This shutter can readily be removed and replaced without disturbing any other part of the mechanism. It is also possible to fit any focus lens from 4 ins. to 20 ins., which was impossible with the earlier models. Other improvements consist of an exterior lever for adjusting the shutter slit, an instantaneous method of converting from hand to power operation, and the introduction of a ratchet plate changer—further mention of which will be made later.

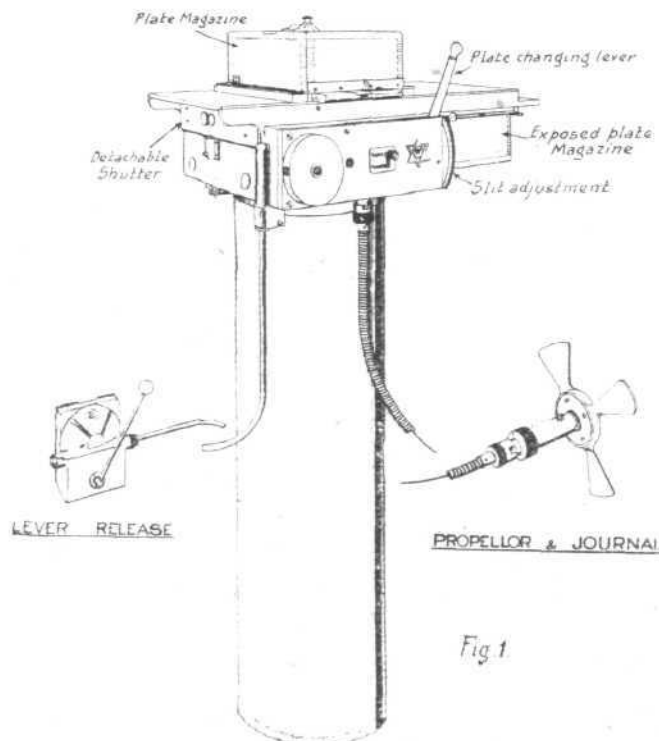
In the general design of the "L.B." the unit system

of construction has been adopted, which units can rigidly be connected to the camera body, and very easily and quickly dismantled without the use of special tools. The camera consists of a body of a light aluminium casting, a lens adapter holding the lens with its mount, plate magazines, Bowden lever release, and, as the power unit for automatic plate changing, a propeller with flexible shafting (Fig. 1).

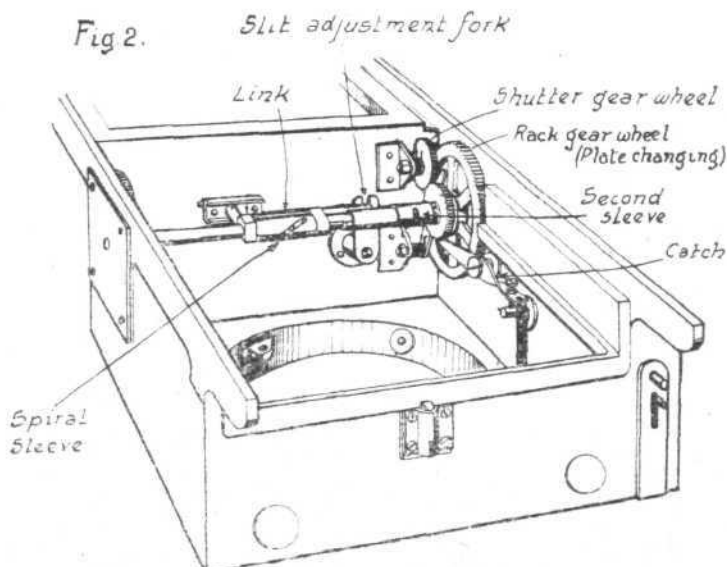
Three different forms of lens mounts are made, and these are interchangeable on the bayonet fitting on the lower part of the camera body. It is thus possible to fit lenses ranging from 4 ins. to 20 ins. focus, two of the mounts each having a reversible carrier in which the lens is rigidly mounted, giving 4 ins., or 6 ins., and 8 ins. or 10½ ins. respectively. Adjustment for focussing is provided in each case.



THE WILLIAMSON "L.B." AERO-CAMERA: A general view of the camera, with propeller drive, Bowden release, lens mounts, etc.



THE WILLIAMSON "L.B." AERO-CAMERA: Fig. 1. Sketch showing the position of the principal units, adjustments, etc.

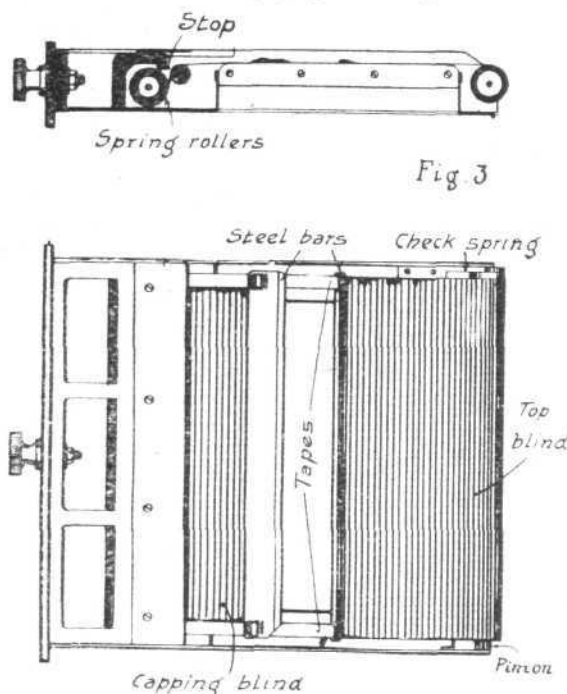


THE WILLIAMSON "L.B." AERO-CAMERA: Fig. 2. Diagram showing the plate changing and shutter setting mechanism.

much useful work with the R.A.F. With this experience behind them, the Williamson Co. have, in the "L.B.," been able to produce a camera that will successfully fill the requirements for post-War aerial photographic work.

A simple and reliable plate magazine is used, consisting of a wooden box, containing 18 plates, mounted in runners on the top of the camera, a similar box, mounted on an extension at the side of the camera body, for exposed plates,

and a ratchet-changing arrangement. The plates, when released from the top magazine rest in a pile in their sheaths directly over the exposure aperture. Fitted in the top of the camera is a flat sliding frame which embraces the bottom plate on three sides; the open end of this frame has spring ratchet catches on each side, which engage with the plate to be changed. Racks on this frame engage with two gear wheels inside the camera body (see Fig. 2), the spindle of which carries a pinion engaging with a quadrant attached



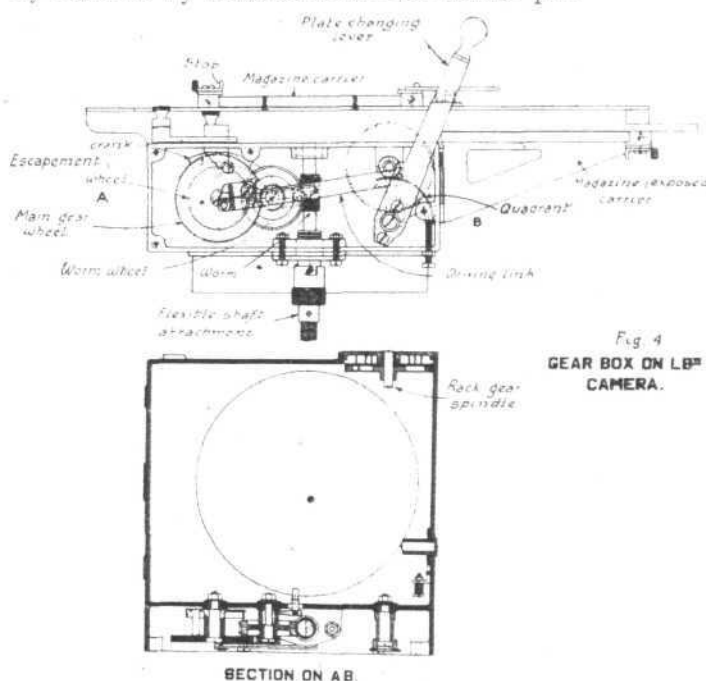
THE WILLIAMSON "L.B." AERO-CAMERA: Fig. 3.
The detachable focal plane shutter.

to the operating handle. A forward movement of the latter causes the sliding frame to travel towards the rear, carrying with it the exposed plate, until over the receiving magazine, where, on the lever reaching the limit of its forward movement, the plate is released and drops into the magazine. Bringing the lever back returns the frame to its original position. In order to prevent the plates sliding by gravity from one magazine to the other, a check spring is fitted.

The operation of changing the plates also resets the shutter in the following manner. Mounted on the same spindle carrying the rack gear wheels is a smaller pinion which engages with an intermediate gear wheel carried by a bracket on the wall of the camera body (Fig. 2). This intermediate gear wheel engages with a pinion on the shutter winding roller. As previously mentioned, the focal plane shutter (Fig. 3) is detachable, and is contained in a case or drawer which slides into an opening at the end of the camera which usually comes nearest to the observer. It is held in position by a spring catch. The winding or top blind is attached to a wooden roller provided with the pinion referred to above. When idle, this roller is held in a definite position by a check spring. Sewn into the end of the blind is a flat steel bar, to which are attached two tapes, these being fastened to a spring roller at the other end of the shutter. The capping or bottom blind is fastened to a separate roller (adjacent with the tape roller), and is provided with a wide steel bar turned over at the front to form a lip and slotted at each end to allow the tapes to be threaded through.

In setting, when the top blind roller is turned by the gearing, both blinds are drawn across the focal plane, the bar of the top blind engaging with the lip on the other bar so that the gap is closed. On reaching the roller the latter bar is held, whilst the top blind continues travelling a certain amount, drawing the tapes with it through the slots in the bar, and so separating the two blinds. The amount of this "overwind," i.e., the width of slit, is determined by an ingenious adjustment, giving widths of from $\frac{1}{4}$ in. ($\frac{1}{1000}$ sec.)

to $1\frac{1}{2}$ in. ($\frac{1}{100}$ sec.). When the top blind is released to make an exposure, both blinds are moved rapidly back across the focal plane under the influence of the two spring rollers, until the bar of the capping blind comes up against a stop (seen above the spring rollers) provided with a felt buffer, which holds the bar and tips it up to allow the tapes to pass freely through the slots, thus drawing the bar on top blind underneath the lip on the bar of the capping blind, and again closing the slit. The slit adjustment is regulated by means of a spiral sleeve (Fig. 2), mounted on the gear-wheel spindle, connected by a forked lever and link with a lever on the outside of the camera. The spiral sleeve engages with a second sleeve, having a lug on it which engages with a similar lug on the blind-winding gear wheel. When these lugs are in contact at the commencement of the rotation of the blind-winding gear wheel, the full amount of wind to the shutter, and therefore the maximum aperture of slit, is obtained. On rotating the spiral sleeve, however, these lugs are separated more or less, so that the gear wheel rotates a certain amount before they engage, thereby reducing the amount of wind and therefore the width of slit. A catch engaging with a ratchet on the gear wheel holds the shutter where set, and this is released for the exposure by depressing—by hand or by Bowden lever—the release pin.



THE WILLIAMSON "L.B." AERO-CAMERA: Fig. 4.
The gear-box, and main body.

When it is required to operate the plate changing and shutter setting by means of the automatic drive, a knob projecting outside the camera is moved from the "Hand" to the "Power" position. This brings into action a link (Fig. 4) connecting the hand lever with a gear wheel driven by a worm and worm wheel from the air-vane through flexible shafting. This link imparts the same reciprocating movement to the hand lever as when operated by hand. To prevent continuous movement of the gear wheel (driving the link), several teeth are removed and a tooth-shaped spring inserted. This gap reaches the driving pinion at the same time as a stud in an escapement wheel fitted behind the gear wheel reaches a lug on the exposure trigger, and thus brings the gear wheel to rest. On depressing the trigger the lug moves past the stud, and the gear wheel is once more thrown into mesh with the driving pinion.

In the foregoing we have not, of course, gone into full details of the mechanism of the "L.B." camera, and there are many other noteworthy mechanical features, mention of which lack of space prohibits.

Messrs. Short Bros. (Whitehall House, Charing Cross, London) are the sole concessionaires outside the British Empire for "L.B." cameras.

Civil Air Service in Argentina

THE Argentine Army Aviation authorities have submitted to the Government a project for the establishment of air services throughout the Republic. The central station will be at El Palomar, near Buenos Aires, and the principal outlying stations at Monte Caseros, Cordoba, Neuquen, Salta, Mendoza, and Gallegos.

Twenty-two secondary stations and 126 landing grounds are projected, so placed that an aeroplane will at any time be within 70 kiloms. of a landing ground. Altogether a very ambitious beginning. To further help things along, private individuals are invited to offer gratuitously to the Government, land suitable for use as landing grounds.

LONDON TERMINAL AERODROME

Monday Evening, June 6

It has been another big week for passengers. Saturday was a record day, there being 86 travellers in and out of the airport.

The passengers for the week numbered 370, bringing the total of air travellers to and from the Continent between May 1 and June 5 to 1,475. The number of flights in that time was 407, making an average of about $3\frac{1}{2}$ passengers per machine. When it is remembered that many of the machines are still only two and three-seaters, and taking into consideration goods and mails, the average loading of the machines must have been fairly high.

The Anglo-American Company's bulk storage petrol plant is now in working order. On a busy day it hardly stops working from about 9.30 a.m. until well into the afternoon.

The mooring-mast has now commenced to grow, and rapid progress is being made. A light railway has been laid down from the sheds out to the mast. An agricultural engine, strongly resembling the pictures of Stevenson's "Rocket," has arrived, and has been placed near the mast. This is to be used, as far as can be gathered, for winding in the airship. Electric power is being run out to supply the motors for pumping water-ballast to the top of the mast. Why this electrical power could not be used for winding in the airship, and thus save all the business of lighting the fire and getting steam up in the "Rocket" each time the ship comes in, is somewhat of a mystery.

Mr. Saul, who joined Aircraft Transport and Travel as navigation expert shortly before that Company closed down, is now back on the aerodrome as an Air Ministry official. He is to be in charge of compasses, navigation, and the aerodrome landing lights. This is a welcome innovation. Many firms have no arrangements for compass-swinging, and, in consequence, the compasses fitted to some machines have been misleading rather than helpful.

Mr. Saul has filled up the time since leaving the aerodrome in December at Pulham on airship work.

Air Control of Derby Traffic

THE "R.33" was visible from the aerodrome whilst she was watching the traffic to and from the Derby. Two D.H.9's, owned by the De Havilland Aircraft Company, used the aerodrome as a base for their photographic operations on the same day. Mr. Wills, of Aerofilms, was in charge, and he tells me that some very fine photographs, both still and motion, were obtained. Colonel Laurie, who had in hand the traffic arrangements for the Derby, flew over the approaches to the course, piloted by Mr. Cobham, and expressed great satisfaction with everything.

The aerodrome is at last to have a Sports' Club. A meeting was called on Monday with the idea of getting a cricket team together, but the response was so good that it was decided to extend the scope of the original scheme to include all sports. The title of the club is to be the "London Terminal Aerodrome Sports' Club," and already there are between 50 and 60 members. A plot of land has been acquired near the old firing-butts on what was the Beddington aerodrome, the position being clear of the airship—which if all other uses fail must be used as a grand-stand. A committee has been formed, consisting of a representative from each of the transport companies, and from the Air Ministry staff on the 'drome. Major Greer is to be chairman of the committee. It is hoped that the various air transport companies, now that business is good, will make substantial donations to the Club funds, in order to give it a good start.

Instone Air Line

THE Instone Air Line have had a very busy week. On Friday two machines left for Paris instead of the usual one. I understand that this is now to become a regular thing.

Mr. Robins, who was with Aircraft Transport and Travel, has now joined the Instone Line as a pilot.

Several air "specials" have been engaged during the past few days. On Wednesday the "B.A.T." flew over towards Epsom to take newspaper photographs of the Derby crowds. Mr. Robins made his first flight with the Instone Line on Saturday, taking the "D.H.4A" to Paris with a special passenger.

Mr. Barnard flew the "4A" to Manchester on Wednesday with photographs of the Derby for the northern newspapers.

On Saturday evening Mr. Barnard flew the Vimy to Paris with, amongst others, Donoghue, the rider of the Derby winner, on board. After riding in a race in Paris on Sunday, Donoghue was flown back to Croydon on Sunday night in the Vimy. Owing to the late hour of starting, and because of a strong head-wind, Mr. Barnard had to fly the last few miles in the dusk, and landed at Croydon with the help of the aerodrome lights.

The air excursion to Paris, scheduled for Thursday, was abandoned owing—it is understood—to a lack of bookings.

The new "D.H.18A" (Geawo) is back from Stag Lane, and is shortly to be put on the service.

Air Minister's Visit

CAPT. GUEST, Secretary of State for Air, visited the aerodrome on Saturday, and witnessed the departure of several "air expresses" for Paris and Amsterdam. He was met by Generals Sykes and Festing and, accompanied by Major Greer, made a tour of the aerodrome and sheds. Capt. Guest was greatly interested in the passenger accommodation of the machines, and tested the comfort of the seats in practically all the types now used.

Mr. Strother, of the Marconi Company, is back from Rochester, where he has been fitting wireless 'phones to a number of flying-boats built for the Japanese Navy.

Two Handley Page 0-400's left with full loads for Paris on Saturday, and returned to-day. This "air week-end in Paris" is becoming very popular, and both the British companies have permanently doubled their week-end services to cope with the demand for seats.

The Handley-Page people are now settling down in their new offices and sheds. Mr. Flowers tells me that the "W.8" with the two "Lion" engines will be put on the service in about a month's time.

The advent of Handley-Page, with staff and passengers, has caused the Trust House to become rather crowded. The staff has had to be increased, and there is little doubt but that, with the growth of air transport, the hotel will need to be enlarged and more up-to-date cooking arrangements provided.

Paris Service Increased

OWING to the number of applications for seats, the Grands Express have now increased their Paris service from four times weekly to daily in each direction. Mr. Bouderie rushed away for a few hours on Saturday afternoon to get married, but business is too brisk to allow a little matter of this sort to interfere, and Mr. Bouderie was back again in his office early on Sunday morning.

Mr. and Mrs. Didier, of Messageries Aérienne, travelled by Breguet to Paris for a short holiday on Saturday morning, and, with the absence of his "right-hand man," Capt. Greig has been more than usually busy.

Two British machines, a "D.H.4A" with a Liberty engine, and a "Martinsyde F.4," have been flown over to Belgium to take part in a series of aerial races. Mr. Piercy has flown both machines to Belgium, and will pilot the "D.H.4A" in the races.

The Aircraft Disposal Company are fitting up eight S.E.5A's with Viper engines for the University air race.

Air Transport for Invalids

CAPT. LEVERTON, of the K.L.M., has been approached by a motor transport firm, who specialise in the transport of invalids, with a proposition for carrying invalids to foreign hospitals and sanatoria by air.

The Fokker monoplanes are still carrying full loads to Holland, but the return load shows little sign of increasing.

Capt. Muir, of the Surrey Flying Services, has had two Avros out joy-riding over the week-end, Mr. Hayns being the second pilot. The coal strike, and the consequent restricted train service, are having a bad effect on the joy-riding, as the majority of such passengers come from a distance.

Saturday being a record day for traffic, the wireless took this very unfortunate opportunity to become completely jammed by "atmospherics," and news of the arrival of the outgoing "air expresses" in Paris was not received officially until the following day. Considering that the officials of the air transport companies were anxiously awaiting news of their machines, knowing that the weather was none too good, it certainly seems that some alternative method of communication should be put into operation when the wireless is "jammed."

On this particular occasion there were five machines, representing a total value of tens of thousands of pounds, and with 56 passengers aboard, of which no news whatever was forthcoming. An official of one of the firms concerned at last rang up the man in charge of trunk calls at the Post Office, and, explaining to him the urgency of the case, got a call put through to Paris in about five minutes. He could, however, get no satisfactory reply from Le Bourget, and had to put another call through to his Paris office, who informed him of the safe arrival of all the machines.

Surely the Air Ministry could have obtained this information either by 'phone or telegram, much more quickly and easily by using official channels than was possible for a private firm. Instead, all that was done was to wait calmly until the "atmospherics" disappeared on the following morning.

AIRSHIPS AND ARCHITECTS

A 1921 Competition

THE Grissell Prize, an annual award consisting of £50 and a gold medal, given by the Royal Institute of British Architects, is offered this year for the best design for an airship mooring mast. The accompanying diagram illustrates the pivoted masthead, which does not form part of the competition. This part of the structure is to be considered given. For the rest the competitors have a free hand. Following is the text of the rules:—

A Gold Medal and the sum of £50 will be awarded to any British subject, not having been in practice longer than 10 years, who produces the best design for a Mooring Mast for an airship in connection with an hotel accommodating 50 passengers.

The Mooring Mast to be 160 feet high, and to accommodate—

- (1) 2 lifts, each carrying 10 passengers.
- (2) 12-in. pipe for gas; 6-in. pipe for water; 6-in. hawser-pipe; and 2-in. petrol main.

Pull of airship estimated at 40 tons.

The diagram shows the pivoted masthead; 8 ft. below this is a balcony with collapsible taffrail for receiving the gangway* of the airship; 8 ft. below this is the balcony where the lifts land, the 2 balconies to be connected by a stairway.

The mast below pivoted head may be any diameter, but it must be noted that the airship is liable to go down by the stern, so that any projection or stay or guide or buildings on the ground must be kept within a cone bounded by the line AB on the diagram.

Hauling machinery room at base of mast.

Garage for 12 cars.

Hotel for 50 passengers.

Drawings required:— $\frac{1}{4}$ -in. scale vertical section of mast, with plans as necessary. 1-in. scale details sufficient to explain the construction. $\frac{1}{8}$ -in. scale plans, sections and elevations of the whole group, showing lay-out and general arrangement of the hotel and other buildings and their relation to the mooring mast.

Any buildings which are not within the cone above-mentioned must be at least 750 feet from the centre of the mast base to clear the airship when it is depressed.

Competitors should send their calculations.

Each design or set of drawings is to be distinguished and delivered as directed, in Nos. 1 and 5 of the General Conditions, and each competitor is required to send, in a sealed envelope, a statement in writing that he has not been in practice for a longer term than 10 years, and that all the drawings he submits therewith have been entirely made by himself.

For the benefit of our readers we publish the following extracts from the general conditions of the competition:— All work sent in must be delivered before 4 p.m. on or before December 10, 1921, at the office of the Royal Institute, addressed to the Secretary, Royal Institute of British Architects, 9, Conduit Street, London, W.1. The drawings must be submitted without the name of the competitor, but must have a motto marked in the right-hand lower angle of each mount. Accompanying the drawings and

* Landing is effected by a hinged gangway let down from the airship.

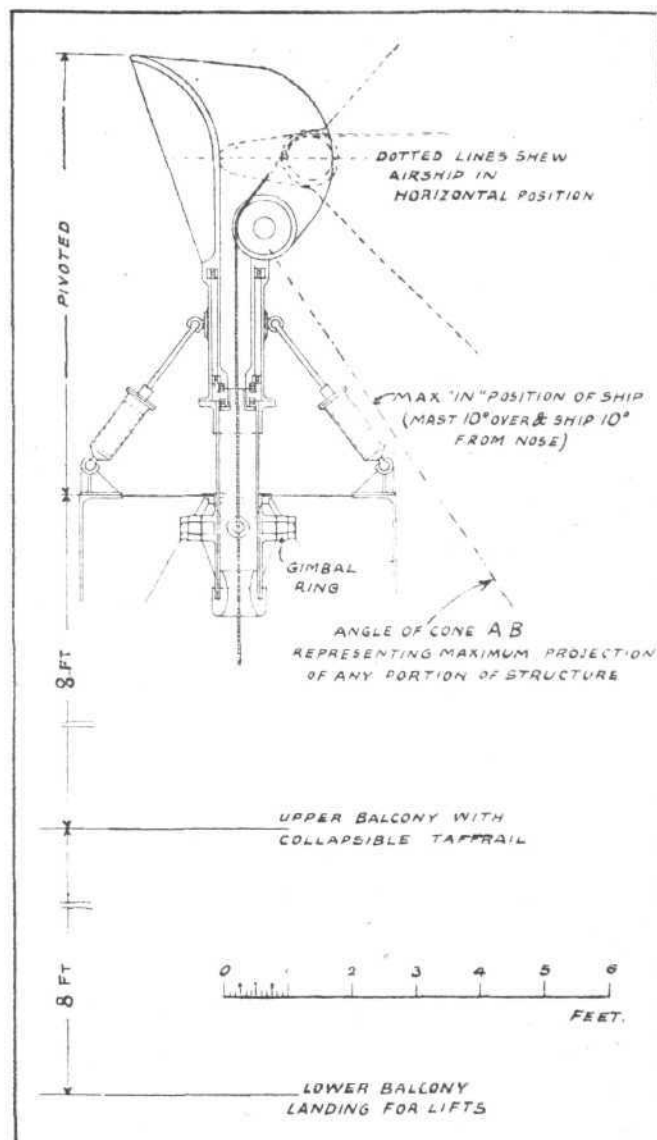
Derby Pictures and Aviation

VERY remarkable enterprise was once again in evidence on the part of the *Daily Mail* in connection with pictures of the Derby last week. Appreciating the wonderful help to perfect efficiency which aeroplanes have brought within the reach of those astute enough to avail themselves of the new art, our contemporary fairly spread itself to show what can be achieved when imagination keeps pace with the progress available to journalism. Practically it was a repetition of last year's enterprise, only a bit better, by which it was possible to make simultaneous publications the next morning, including the Continental edition of our contemporary of photographs of the finish of the race, a really great achievement even in these days of journalistic hustle. The feat was made possible by a combination of aeroplanes and fast motor-cars, including a specially fitted motor dark-room, in which two photographers developed their plates *en route* to Carmelite House, which was reached at 4.5 p.m., four minutes quicker than last year.

Half-tone reproductions of the photographs necessary for newspaper printing were put in hand immediately. A fast car was waiting to convey them to Croydon aerodrome, where a special aeroplane, piloted by Captain Barnard, of the Instone Air Line, was waiting to take the pictures to Alexandra aerodrome, Manchester.

The journey began at 5.40, and was completed at 7.30 p.m.

designs must be a letter with the name and address of the competitor. This letter is to be put in an envelope sealed with a blank seal and bearing on the outside the name of the prize competed for (in this instance the Grissell Prize), and the



same motto as that attached to the work submitted. This sealed envelope must be enclosed in another envelope and sent by post, directed to The Secretary, R.I.B.A., 9, Conduit Street, Regent Street, London, W. 1.

A dash to the Manchester offices of the paper by car, and the pictures were ready to print in the Irish, Scottish, and all northern editions of the paper. The flight of 185 miles was made under the two hours. In addition to the picture of the finish of the Derby, the aeroplane carried a whole page of the Derby photographs, including a wonderful air picture, a copy of which is reproduced in this week's issue of *FLIGHT*, all ready for immediate publication.

A third staff photographer illustrated the race for the Continental edition of the *Daily Mail*. He motored direct from the course to Croydon with his plates, which left at 4.40 p.m. by the Messageries Aériennes. They arrived at Le Bourget, outside Paris, at 6.40 p.m., were motored to the Paris office and were displayed in Travel Bureau windows of the paper in the Rue Scribe.

Mr. Butler Back Again

LOOKING very sun-burned and fit, Mr. A. S. Butler, who has been touring the Riviera on his Bristol Tourer, has arrived back at Croydon, making the journey from Le Bourget to Waddon in 2 hours 11 minutes. He had with him in the machine, in addition to a friend, about 350 lbs. of luggage and spare parts for the machine. Mr. Butler has nothing but praise for the Bristol machine, and says that although he has had little experience of cross-country flying, he had no difficulty in finding his way about the south of France.

THE DORNIER TWIN-ENGINE MONOPLANE, TYPE G.I

Two 185 H.P. B.M.W. Engines

IN our issue of May 9, 1921, we published two photographs of a wind-tunnel model of the Zeppelin-Dornier twin-engined monoplane, Type G.I. Since then further details are to hand relating to this machine. As in previous Dornier aeroplanes and seaplanes, the construction is of metal throughout.

Generally speaking this Dornier resembles previous ones in the shape of its monoplane wing, fuselage, and tail. It differs, however, in that it is provided with two engines placed very low at the outer ends of the usual Dornier wing roots growing out of the lower portion of the fuselage. The latter projects only a short distance in front of the leading edge of the plane, thereby making it possible to bring close together the two engines, which, as a matter of fact, are only sufficiently far apart to prevent their tips touching. Evidently the object of this arrangement is to reduce to a minimum the turning couple set up in case one of the engines stops.

The undercarriage is of the simplest possible type, consisting of one large wheel on each side, placed immediately underneath the engines. The weight of the fuselage with its contents and of a portion of the wing, is transmitted to the wheels by the deep section wing roots, to the ends of which the engines are attached. The wing itself is braced by two tubes of streamline section on each side, supporting the non-tapering monoplane, which is of the usual rectangular plan form.

The general construction, as usual in Dornier practice, consists of steel members for all heavily stressed parts, and duralumin for the details taking small loads only, and for the covering.

Owing to the general arrangement of the machine, one imagines that it would be comparatively safe in the case of a crash, as the engines are slightly below and well ahead of the cabin. The petrol tanks are placed inside the wing, one on each side, so as to give gravity feed to the engines, but yet

being, it is claimed, sufficiently far removed from them to ensure that no petrol could possibly leak down on to the hot engines.

So far as we are aware, no provision has been made for enabling passengers to get out through the roof, in case the door should be jammed, but if found necessary, this could easily be arranged for in the rear portion of the cabin, where the trailing edge of the wing could be cut away, probably without serious loss in aerodynamic efficiency. On the whole, the machine, which is designed to carry eight passengers in addition to the pilot, impresses one as being of rather promising design, and it will be interesting to see how the machine behaves in actual use. The B.M.W. engines have a reputation for reliability and exceptionally economic fuel consumption, and, rating the engines at 200 h.p. each, the machine carries a passenger for each 50 h.p., which should be a fairly economic proposition, especially coupled with the fact that the machine has a cruising speed of over 90 miles per hour.

Following is a brief specification of the Dornier G.I. :—

Length o.a...	..	..	..	40 ft. 0 in.
Span	..	..	..	68 ft. 10 ins.
Chord	..	..	..	13 ft. 1½ ins.
Height	..	..	..	10 ft. 10 ins.
Wing area	..	..	..	862 sq. ft.
Engines	..	..	..	2 B.M.W., 185 h.p. each.
Fuel consumption at full speed :	Petrol, 172 lbs. ; oil, 9 lbs. per hour.			
At cruising speed :	Petrol, 132 lbs. ; oil, 9 lbs. per hour.			
Weight empty but with water	..	..	..	5,170 lbs.
Weight fully loaded	..	..	..	7,600 lbs.
Weight per sq. ft.	..	..	..	8.8 lbs.
Weight per h.p. (nominal)	..	..	..	20.5 lbs.
Maximum speed	..	..	..	112 m.p.h.
Cruising speed	..	..	..	93 m.p.h.
Ceiling (with full load)	..	..	..	19,700 ft.

French Air Grand Prix

FOR the last period this year allotted to trials for the Grand Prix of the Aé. C. de France on June 19 to 21, it looks as if there will be some interesting competitors. Those who are now pretty sure to participate include Sadi Lecointe (Nieuport), Jean Bernard, Bossoutrot, d'Or (Farman), Roget (Breguet), Maicon (Caudron), Casale (Spad), and Douchy (Potez), Commandant Vuillemin is also a possible starter on a second Breguet.

Dutch Government Helping Commercial Flying

IT has been decided by the Dutch Government to place the one-time naval-flying station of Veere, in the Province of Zeeland, which has a seaplane harbour, at the disposal of the Fokker Company.

A Swedish Appointment

CAPT. LUBECK, Chief of the Swedish Naval Air Service, has been appointed by King Gustaf, Swedish Minister of Defence, in place of General de Hammarsjöld, resigned.

Bolshevists and "Secret Travel"

ACCORDING to a Helsingfors message, the Soviet Government, it is reported, has decided to place orders with British firms for 600 aeroplanes, to enable Bolshevik military

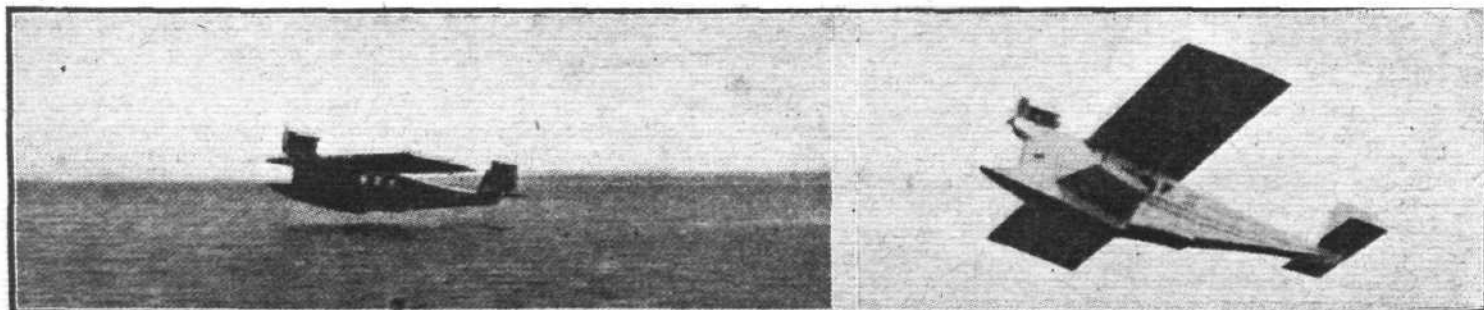
authorities "to travel in secret." Which leaves us wondering.

Aerial Mails in the Congo

WE have referred several times to the opening up of the Congo district by means of aircraft. The regular air service already running between Kinshasa and Lisala will, we learn, shortly be extended to Stanleyville, and will then cover a distance of 1,750 kilometres. The results obtained for the past year are very satisfactory.

The hours of flight amount to over 600, and 75,000 miles have been flown. There were 53 trial flights, 48 exhibition flights, 13 special trips and 43 mail-carrying flights, 82 passengers were carried, and the average of regularity was 94 per cent. Landing for small repairs occurred on 3 per cent. of the flights, and forced landings on 3 per cent. The apparatus used is a Levy-Lepen triplane with 300 h.p. motor, which makes an average of 140 kilometres per hour when carrying a cargo of 1,000 kilogrammes.

This is the first regular aerial service in Africa, taking passengers and mails in two stages of five hours each for over 1,200 kilometres. It shows that difficulties of climate and atmosphere are not insurmountable, and is a great factor in the development of the colony.



Two views of the altered Dornier Cs. II : The alteration to the front of the hull is clearly visible in these views, which give a good idea of the steps. A description of this machine was published in our issue of April 21, 1921. We understand that Van Berkels of Rotterdam have obtained the agency for this machine in Holland.

NOTICES TO AIRMEN

Aerodromes for Civil Use : Amendments

NOTICE to Airmen No. 33 of 1921 (Aerodromes for Civil Use : Consolidated List) is amended as follows :—

LIST C.—Licensed Civil Aerodromes

Nottingham, Trent Lane, should be deleted.
(No. 45 of 1921.)

Holland : Lighthouses on Aerodromes ; Emergency Landing Grounds

NOTICE to Airmen No. 126 of 1920 (paragraph 1) is amended and amplified as follows :—

AMENDMENTS
I. Aerodromes

SCHIPHOL—The W/T mast will be illuminated, in the manner explained in the above-mentioned Notice to Airmen, every evening from half an hour after sunset until two hours after sunset, and during such other periods as may be deemed necessary.

The position of the mast is at a distance of 560 m. (612 yds.) from the centre of the aerodrome, in the eastern corner.

SOESTERBERG—The W/T mast is illuminated in the manner explained, with the exception that the beam is divided into two parts, one half of the light being concentrated in a horizontal plane, and the other half being concentrated in a plane at an angle of 45° above the horizon.

These lights are exhibited every evening from half an hour after sunset until two hours after sunset, and during such other periods as may be deemed necessary.

The mast is situated at a distance of 500 m. (546 yds.) N.E. of the centre of the aerodrome outside the boundary of the landing ground.

ADDITIONS**II.—Emergency Landing Grounds**

The following emergency landing grounds have been established :—

ALKEMADE—*Note*.—As in the neighbourhood of Alkemade no ground suitable for landing in all directions is available, two grounds have been provided, one for landing in the direction East and West, and another for landing in the direction North and South.

(a) *East-West* : *Position*.—Latitude 52° 11' N. ; Longitude 4° 33' E. Situated 5 kms. N.E. of Leyden, 3½ kms. to the South of the S.W. point of the Haarlemmermeerpolder (draining installation) in the Vrouwe Vennepolder and S.E. of Lake Venne. *Altitude*.—Sea level. *Description*.—Grass surface. Dimensions 250 m. East and West by 100 m. North and South. *Markings*.—A white rectangle 10 by

5 m. is marked on the centre of the landing ground, the long sides running East and West. *Communications*.—Nearest telephone—Rypwetering Post Office, distant 2½ kms. Nearest railway station—Rypwetering on the Leyden-Hoofddorp Line, distant 3 kms. Nearest aerodrome—Schiphol, 23 kms. to the N.E.

(b) *North-South* : *Position*.—Latitude 52° 11' N. ; Longitude 4° 33' E. Situated 800 m. to the South of the above landing ground, 4 kms. to the North of Leyden, 4½ kms. to the South of the S.W. point of the Haarlemmermeerpolder (draining installation) in the Roode Polder and 150 m. to the East of the Stroombloot. *Altitude*.—Sea level.

Description.—Grass surface. Dimensions 200 m. North and South by 150 m. East and West. *Markings*.—A white cross 10 by 5 m. is marked approximately on the centre of the landing ground, the long arm running North and South. *Communications*.—Nearest telephone at Rypwetering Post Office, distant 3.8 kms. Nearest railway station—Rypwetering on the Leyden-Hoofddorp line, distant 4½ kms. Nearest Aerodrome—Schiphol, 23 kms. to the N.E.

DEVENTER.—*Position*.—Latitude 52° 14' N. ; Longitude 6° 12' E. Situated 1 km. to the East of the river IJssel and 1¼ kms. to the S.E. of Deventer, in the S.E. part of the Teuge or Bergweide on the N.W. bank of the Koerhuisbeck. *Altitude*.—Sea level. *Description*.—Grass surface. Dimensions 400 by 400 m. *Markings*.—A white circle of 13 m. diameter is marked approximately in the centre of the landing ground. *Communications*.—Nearest telephone—Deventer Municipal Gasworks, distant 1¼ kms. Nearest railway station—Deventer, distant 3½ kms. This ground is close to the steam tramway Deventer-Lochem. Nearest Aerodrome—Soesterberg 64 kms. West by South.

NIEUWENHOORN.—*Position*.—Latitude 51° 50' N. ; Longitude 4° 10' E. Situated 8 kms. to the South of Brielle and 3 kms. to the East of Hellevoetsluis, in the Nieuwenhoorn Polder on the Noordsche Molenweg, 300 m. to the South of the steam tramway Hellevoetsluis-Rotterdam and 500 m. to the West of the Oudenhoornschedijk. *Altitude*.—Sea level. *Description*.—Grass surface. Dimensions 325 by 250 m. *Markings*.—A white circle of 13 m. diameter is marked approximately in the centre of the landing ground. *Communications*.—Nearest telephone—at Mr. C. J. de Kramer's on the Molendijk at Oudenhorn, distant ½ km. Nearest tramway station—Oudenhorn, on the Hellevoetsluis-Rotterdam steam tramway, distant 2 kms. Nearest Aerodrome.—Rotterdam 20 kms. (approximately) E. by N.

(No. 46 of 1921.)

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN MAY 29 AND JUNE 4, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
Croydon-Paris ...	34	146	6	17	30	3 0	Goliath F-GEAC (1h. 50m.)	B. (6), Br. (1), Bt. (1), D.H.4 (1), D.H.18 (1), G. (3), H.P. (3) Sp. (4), V. (1).
Paris-Croydon ...	33	173	16	23	27	2 59	Spad F-CMAV (2h. 4m.)	B. (7), Bt. (1), D.H.18 (1), G. (4), H.P. (3), Sp. (6), V. (1).
Croydon-Brussels ...	7	8	4	5	6	3 11	Martinsyde G-EAXL (1hr. 57m.)	D.H.4 (1), D.H.9 (2), M. (1).
Brussels-Croydon ...	5	6	5	5	4	3 23	D.H.4 O-BATA (1h. 59m.)	D.H.4 (1), D.H.9 (2).
Croydon-Amsterdam ...	6	6	5	5	6	3 59	Fokker H-NABH (2h. 15m.)	F. (4).
Amsterdam-Croydon ...	7§	9	5	7	7	3 46	Fokker H-NABT (3h. 11m.)	F. (4).
Totals for week ...	92	348	41	62	80			

* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

§ One to/from Rotterdam.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. Sa. = Salmson. Se. = S.E. 5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc. :—Co. des Grandes Expresses Aériennes ; Handley Page Transport, Ltd. ; Instone Air Line ; Koninklijke Luchtvaart Maatschappij ; Messageries Aériennes ; Syndicat National pour l'Étude des Transports Aériens ; Co. Transaérienne.

AIRISMS FROM THE FOUR WINDS.

THROUGH our overseas Dominions there is now more than a hope that the airship situation may be salved.

IF successful, for the practical move thanks will be due to Mr. A. H. Ashbolt, Agent-General for Tasmania, whose scheme for an Imperial Airship Transport Co. is to be put forward at the Conference of Empire Prime Ministers. The suggested capital is 1½ millions, mainly to be found by the Governments concerned, who would have seven or eight representatives on a directorate of twelve or thirteen.

ONE THOUSAND military aeroplanes is the figure at which M. Bénazet, deputy for l'Indre, puts the minimum standing air fleet of France. He is very earnest upon the subject, and has introduced a Bill in the Chamber to give effect to his proposals. His plans for carrying through the scheme are all set out, and there is even a suggestion of making the affair profitable to the State. If the latter is a true bill, it is worthy of letters patent.

AN incident the other day at London's air-port brings to mind the American proposal, to which reference was made in *FLIGHT* many months back, viz., that passengers in aeroplanes should be charged by weight. The "allegation" in this case is that, owing to the excessive weight of three fat persons among the passengers an "air express" setting out recently from the London air-station to travel to Paris, ascended so slowly that after it had risen about 100 ft., the pilot decided that his load was too heavy for the 230 miles journey, and returned to the aerodrome. A second aeroplane was then run out of the sheds, and some of the passengers from the first were transferred to it; whereupon both machines flew off in company to Paris.

A CHARACTERISTIC incident, from the *Evening News*, in the life of Air-Commodore Maitland:—

"While on his round at 3 a.m., one morning, last week, a watchman at the Royal airship shed, Cardington, was surprised to see a parachute floating slowly to the earth.

"Can I get a bed here?" said a calm voice as the strange object reached the ground.

"The parachutist proved to be Air-Commodore E. N. Maitland.

"Later the Commodore explained that he had attended the Derby on board the R33, and, as the airship was passing over Bedford on her return journey to Howden after the races, he suddenly remembered that he had to attend a special conference at Cardington Works that day.

"There were no landing facilities at the time," said Com-

modore Maitland, "the only way to get to Cardington in time was to jump there—so I just jumped—!"

THERE was something almost pathetic about the appeal made by Sir Frederick Sykes, Controller-General of Civil Aviation, for public support to enable the proposed scheme for turning our airships to commercial use to be accomplished. He is in the unfortunate position of not having funds for the maintenance of these airships, and it is therefore urgent that something should be done to relieve the Air Ministry of the expense and save the vessels and their equipment for the benefit of aviation and the reputation of the country.

It is curious that so far back as 1784, when the first brave pioneers of the air were struggling against public scorn and indifference, British aeronauts were in financial difficulties. There is a quaint old caricature of that date now hanging in the Royal Aero Club which depicts a shabby-genteel individual of somewhat attenuated proportions, and underneath the portrait are the following lines:—

Behold a hero, comely, tall and fair!
His only food phlogisticated air!
Now on the wings of mighty winds he rides,
Now torn thro' hedges—dash'd in ocean's tides!
Now drooping roams about from town to town,
Collecting pence t'inflate his poor balloon;
Pity the wight, and something to him give,
To purchase gas to keep his frame alive!

Apparently "phlogisticated" signified in those days air made inflammable—and a very nice word, too! It is to be hoped that the few million pence required to keep alive the frames of H.M.A. "R. 33" and her sister ships may be collected in good time.

As a matter of topical interest it is worth recording that an aerial view of the Derby from a balloon was made and published as far back as 1846. The contrast with the views of today is amusing, the only traffic visible being horse-drawn, and the attendance being apparently in the neighbourhood of fifteen or twenty thousand.

At a still earlier date (1836), it is to be noted that "An Aeronautical View of London" falls to be recorded in a coloured print by R. Havell, which is now in the possession of the London Museum. It is one of a collection of about 50 prints presented to the Museum by Mr. R. A. Leckie, and it is stated to be the first use of the word "aeronautical" in connection with a view of London.



A batch of Avros recently delivered to the Belgian Government by air.

SERVICE BOXING

At Olympia some fine boxing work was witnessed, commencing on Tuesday, in connection with the Imperial Services Boxing Championships, when the R.A.F. was prominently represented. The results for the day were:—

Officers

Light-weights.—First series: Flt.-Lieut. Smith (R.A.F.) (holder) beat Gnr. Woodfield (R.N.) on points; Lieut. Rees (Royal Marines), a bye; Surg.-Lieut.-Comdr. Higgins (R.N.), a bye; Lieut. McCann (Army), a bye.

Second Series.—McCann beat Higgins on points.

Welter-weight.—First series: Major Le Q. Martel (Army) beat Lieut. Nonweiler (Royal Marines) on points; Flt.-Officer Rowe (R.A.F.), a bye; Sub-Lieut. Thornton (R.N.), a bye; Capt. Wand Tetley (Army), a bye.

Second Series.—Wand Tetley beat Thornton on points.

Middle-weights.—First Series.—Lieut. Bailey (R.N.) knocked out Fleet-Officer Page (R.A.F.) in the third round. Capt. Gatehouse (Army) beat Capt. Sheppard (R. Marines) on points, Fleet-Officer Ingram (R.A.F.) and Lieut. Schoales (Army), byes.

Light Heavy-weights.—First Series.—Lieut. Crouch (Army) knocked out Fleet-Officer Drabble (R.A.F.) in the second round. Lieut. Page (R.N.) knocked out Fleet-Officer Clarke (R.A.F.) in the first round. Lieut. Ayres (R.N.) and Lieut. Ross (Army), byes.

Heavy-weights.—First Series: Capt. Buller (Army) knocked out Fleet-Officer Brady (R.A.F.) in second round. Lieut. Darwin (R.N.), Fleet-Lieut. Ushar (R.A.F.) and Major Huntington (Army), byes.

Second Series: Burns beat Rowley on points.

Other Ranks.

Fly-weight.—First Series: L.-S. Patten (R.N.) beat Sergt. Boyd (Army), on points; Pte. Marsden (R. Marines) beat

A.C. 2. Lander (R.A.F.), on points; L.-Bdr. Rowley (Army), a bye; A.C. 2 Burns (R.A.F.) a bye.

Bantam weight.—First Series: Pte. Fraser (Army), beat A.C. 2 Wells (R.A.F.) on points; Sergt. Sallows (R.A.F.) beat Corpl. Fort (R. Marines), on points; Pte. McQuaide (Army), a bye; Bugler Lake (R. Marines), a bye.

Second Series: Lake beat McQuaide on points.

Feather-weight.—First Series: Stoker P.O. Cartledge (R.N.) beat C.Q.M.S. Mills (Army), on points; A.C. 2 Carter (R.A.F.) beat Corpl. McNamee (Army) in one round; C.S. Ingram (R.N.), a bye; A.C. 2 Botelier (R.A.F.), a bye.

Second Series: Botelier beat Ingram on points.

Light-weight.—First Series: Sergt. Stone (R.A.F.) beat P.O. Smith (R.N.), on points; Corpl. Downton (R. Marines) beat Corpl. Dyer (Army), on points; C.S.M.I. McGowran (Army), a bye; A.C. 2 Mills (R.A.F.), a bye.

Second Series: Downton beat Stone on points. Mills beat McGowran on points.

Welter-weight.—First Series: Corpl. Sheppard (R. Marines) beat A.C. 2 Brady (R.A.F.), on points; A.C. 2 Hunter (R.A.F.), w.o.; L.-Corpl. Hopwood (Army), absent; A. B. Hall (R.N.), a bye; Corpl. Bradley (Army), a bye.

Middle-weight.—First Series: S.S. Davis (Army) beat A.C. 2 Higgins (R.A.F.) on points; Sergt. Braddock (Royal Marines) beat Pte. Cattell (Army) on points; P.O. Garden (R.N.), a bye; L.A.C. Jackson (R.A.F.), a bye.

Light Heavy-weight.—First Series: Stoker Pettifer (R.N.) beat Sergt. Pape (Army) on points; P.O. McFee (R.N.) knocked out A.C. Fairbrass (R.A.F.) in the second round; Bombr. Griffin (Army), a bye; Corporal Blythe (R.A.F.), a bye.

IN PARLIAMENT

Brockworth Aerodrome and Barnborough Depot

MAJOR BIRCHALL, on May 31, asked the President of the Board of Trade what are the future intentions of the Ministry with regard to the Brockworth (Gloucester) Aerodrome and the Barnborough (Leeds) Depot?

Mr. Young: As regards the Brockworth Aerodrome, evacuation is proceeding as rapidly as possible, but is at present being retarded owing to the industrial situation. Arrangements will be made to dispose of the aerodrome when the evacuation is complete. As Barnborough is being used as a concentration depot for the contents of numerous smaller depôts which are being evacuated, I am afraid that it will be required for some time to come.

Air Services, West Indies

MR. HURD, on June 2, asked the Secretary of State for Air what plans are in progress to develop air services in and to and from our Colonies in the British West Indies, with Bermuda and Nassau as bases, with a view to overcoming the difficulties of communication between the islands and between them and North and South America?

Capt. Guest: Various schemes for the development of air communication in the West Indies have, from time to time, been closely examined by the Air Ministry. The main difficulty is that of finance. Since the summer of 1920 the Bermuda and West Atlantic Aviation Company have been carrying out valuable pioneer work in the Bermudas, and it is understood that proposals are now being considered for a service between the Bahamas and the mainland.

Brennan Helicopter

MR. RAPER asked what is the exact sum allocated for experiments with the Brennan helicopter; and whether any other helicopter experiments, besides those of Mr. Brennan, are being financed by the Air Ministry?

Capt. Guest: With regard to the first part of the question, no exact sum has been allocated for these experiments. Whatever work is required is carried out at the Royal Aircraft Establishment. The hon. and gallant member need have no fear that the progress of these experiments will be hampered by lack of funds. With regard to the second part of the question, no other practical proposal has, so far, been received by the Air Ministry.

Pilots (Training)

MR. RAPER asked the Secretary of State for Air if he is aware of the fact that, although the scheme instituted by the French authorities to encourage approved pilots to maintain their practical association with flying by means of giving free loan of machines for flights, free fuel, and even free insurance of the aviator while in the air, has only been in force for a very little time, already considerably over one thousand practice flights have been made at the three aerodromes, which have been opened for the purpose at Orley, Angers, and Clermont-Ferrand; and will he consider the granting of similar facilities to approved pilots in this country?

Capt. Guest: I am obliged to the hon. and gallant member for his interesting information about the French Air Force. I may add that the French treat their Reserve pilots, while undergoing a course, in exactly the same way as serving personnel, and that the period is actually reckoned as service. There is, at present, no authority to form an Air Force Reserve of pilots, but the Regulations to establish one will, it is hoped, be approved and issued shortly. Provision will be made for periodical flying practice for those Reserve officers who would be employed on flying duties in the event of mobilisation. It is not considered that provision, from public funds, of free facilities for flying, in the case of officers, who have no Reserve liability, would be justified.

CAMBRIDGE UNIVERSITY AERO-NAUTICAL SOCIETY

ARRANGEMENTS have been made by the C.U.Ae.S. for passenger flights during May week, June 9-13.

These will comprise:—

1. Flights lasting 10 minutes on Thursday 9, Friday 10, Saturday 11, Sunday 12, and on Monday 13, from 2 p.m. to 7.30 p.m. Bookable beforehand or at the aerodrome.

2. Special flights to see each division of the May races, leaving the aerodrome at 4.55, 5.55, and 6.55 on Thursday, Friday and Saturday. Flights will be of about 20 minutes' duration.

3. Flights at any time of the day and for any distance on application.

4. Stunting by arrangement.

Prices.—For seats booked by Saturday, June 4, after which date the Committee reserves the right to increase the charges: 10-minute flights, £1; flights during races, £2.

The aerodrome is at Barton Road, next to Queens' Ground, and the Booking Office at Metcalfe's, Trinity Street. Flying kit is to be provided.

Further details can be obtained from Mr. C. O. B. Beale, Hon. Asst. Sec. Cambridge University Aeronautical Society, R, Great Court, Trinity College.

R.A.F. MEMORIAL FUND

THE Secretary of the Royal Air Force Memorial Fund reports that although like most other organisations they are suffering severely from the present slump, and the stream of public generosity has almost run dry, the Overseas Dominions fortunately are helping to maintain the supply of contributions. H.H. Nawab of Tonk, Rajputana, India, one of the ruling princes of that Empire, has sent a contribution received by the last mail of Rs. 3,000. A number of other contributions of varying amounts have been received from the princes, and other notables of India. The residents of Shanghai, China, have sent through Lady des Voeux, of the Overseas Club, a contribution of £25. Nairobi and Kisumu, British East Africa, have sent the proceeds of a gymkhana and dance amounting to £207. The Governor, residents, and garrison of Hong Kong subscribe £273; and Maj.-Gen. Sir Lee Stack, Governor-General of Soudan, forwards from the officers and civilians at Khartoum a sum of £30.

The administration of the Fund is proceeding with excellent effect, and is issuing helpful assistance to a very large number of deserving cases amongst ex-officers and ex-airmen, and their dependents. It is hoped that early in August the Vanbrugh Castle Boys' Home will be open for the reception of the orphan sons of airmen, who will be boarded, fed, clothed and educated at the expense of the Fund for some years.

SIDE-WINDS

FRENCH readers of FLIGHT will be interested to learn that the Bristol Aeroplane Company, Ltd., have just issued a most informative little booklet in French dealing with the Bristol "Jupiter" 400 h.p. and "Lucifer" 100 h.p. Aero engines. The booklet, which is illustrated by photographs of the complete engines and parts, gives a description of the details of the engines as well as tables of figures and graphs of horsepower against revolutions and curves of brake mean effective pressures. Of the two types of "Jupiter" engines full particulars are given both of the direct drive engine and the geared engine. Readers interested in these high-power radial air-cooled engines can obtain a copy of the booklet free of charge on application to the Bristol Aeroplane Company, Ltd., Filton House, Bristol, England.

We are glad to learn that things are moving in the right direction down at Martinsyde's at Woking. Although a receiver is still in charge during reconstruction, we understand that the work of reorganising the company is now well advanced, and that it is hoped to dispense with his services within the course of about three weeks. Mr. Tilghman-Richards, late of Beardmore's aeroplane department, has been in charge of the work of reconstruction, and will remain with the firm as General Manager. His extensive experience both in motor and aircraft work, which latter dates back to the very early days of flying, should prove valuable to the firm, and it is to be hoped that Mr. Richards' experience of metal construction will be made full use of in his new position.

THE chairman of the reorganised firm is Mr. J. Taylor Peddie, and Mr. H. P. Martin remains in the firm as one of the directors. The main activity will, we understand, be the manufacture of the Martinsyde motor-cycle and side-car but the aviation department will be continued and a vigorous policy pursued. A strong sales department is being formed, with Mr. Floyd, late of Herbert's, as Commercial Manager. London show-rooms are being arranged, and the firm intends to specialise on competition and records work. A racing staff is being got together, and something will probably be heard of the firm in the not distant future. Owing to the short time available it has not been found possible to produce an aeroplane for the Derby, but work will go on in the aircraft department as soon as the new organisation is complete. The sheds at Brooklands will be used for erection purposes only, and will, of course, serve as flying-sheds. The inspection of all Martinsyde work is in the able hands of their chief inspector, Mr. Green, late of the A.I.D., so that one may expect the excellent workmanship for which the firm has always been famous to be maintained under the new management.

The Vickers-Viking in Belgium

In our issue of May 26, we mentioned the award by the Aero Club of Belgium to Captains Cockerell and Broome of commemorative medals for their sportsman like performances during the seaplane trials in August last. By mistake, the engine with which the Viking was fitted was stated to be a Napier. This was a slip, the engine fitted on that particular Viking being a Rolls-Royce "Eagle."

Amsterdam Fare Down to Eight Guineas

It is officially announced by the LepAerial Travel Bureau, of Piccadilly Circus, that a reduction of fares has been made on the Amsterdam Air Line, bringing the single fare to Rotterdam or Amsterdam to £8 8s. instead of £10 10s. and the return £15 instead of £18 18s. The fares to Hamburg and Bremen are correspondingly reduced by 20 per cent. By bringing the fares more into line with the rates on the Paris services, simultaneously with an increased service of aeroplanes, it is expected that heavier traffic will result.

The Toulouse-Casablanca Air Mail

THERE is now a four-days-a-week postal service between Toulouse and Casablanca. Machines leave Toulouse on Tuesdays, Wednesdays, Fridays, and Sundays. Letters posted in time to leave the Gare d'Austerlitz by the 7.32 train on the evening before will reach Toulouse in time to connect with the aeroplanes.

Royal Artillery Institution Essays

For the next essay of the R.A. Institution, the subject decided upon is, "The Deduction of the Future of Coast Defences from Lessons of the Great War, with special reference to developments of surface warships, submarines, aircraft, and poison gas."

U.S. Aerial Bomb Mishap

A VERY unfortunate accident is reported as having occurred on May 31, at the U.S. Government proving station

at Aberdeen, Maryland, resulting in five air mechanics being killed and three officers and eight other ranks injured. The trouble arose through the explosion of a 50-lb. bomb, which accidentally fell from a De Havilland U.S. bomber. From the details to hand it would appear the machine was prepared for a test flight in connection with the rehearsals for the combined Army and Navy manœuvres off the Virginia coast in July, during which obsolete German warships will be bombed by aircraft with the object of discovering the vulnerability of battleships to this form of attack.

Six bombs were carried in the rack beneath the fuselage, one being of 50 and the others of 300-lb. weight. When the machine was a few feet above the ground the smaller bomb, which was loaded with T.N.T., slipped its fastenings, struck the ground, and exploded with terrific force.

Disaster Follows "Stunting"

BARELY three weeks ago, in referring to the multiple-looping stupidity of Laura Bromwell in America, we ventured the opinion that by her methods, she was just "asking for it." The news to hand on Monday last, records the sequel. Miss Bromwell, we regret to learn, was killed at Mineola, on June 5, during a repetition performance of her stunting. She was looping at about 1,000 feet, when the plane crashed. It is poor consolation to learn that she always had a premonition that she would meet her death while "stunting." The pity of it is that the continuation of these fatuous exhibitions should be permitted.

PUBLICATIONS RECEIVED

Nottingham and Its Industries. Official Handbook of the Nottingham City Council. The Industrial Development Officer, Guildhall, Nottingham.

Report No. 108. *Some Factors of Airplane Engine Performance*. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

AERONAUTICAL PATENT SPECIFICATIONS

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